Other embodiments will occur to those skilled in the art and are within the following claims:

What is claimed is:

1. A conductive (electrical, ionic, and photoelectric) polymer membrane article, comprising:

a non-woven membrane of polymer fibers, wherein at least some of the fibers have diameters of less than one micron;

wherein the membrane has an electrical conductivity of at least about 10^{-6} S/cm.

2. The conductive polymer membrane of claim 1 wherein the membrane is photoelectric.

3. The conductive polymer membrane of claim 2 wherein the membrane produces a current of at least about nanoamps/cm^2.

4. The conductive polymer membrane of claim 2 wherein the polymer fibers include a photo-reactive dye.

5. The conductive polymer membrane of claim 4 wherein the polymer fibers further include conducting nanoparticles embedded therein.

6. The conductive polymer membrane of claim 4 wherein the polymer fibers further include a conducting polymer.

7. The conductive polymer membrane of claim 1 wherein the conductivity is created by the inclusion of a conducting polymer in the polymer fibers.

8. The conductive polymer membrane of claim 1 wherein the conductivity is created by the inclusion of conducting nanoparticles embedded in the membrane polymer fibers.

9. A method of fabricating a conductive polymer membrane article, comprising:

providing a polymer solution;

adding to the polymer solution at least one of a conductive polymer and conducting nanoparticles to create a spin dope; and

electrostatically spinning the spin dope to create a membrane of conductive polymer fibers having an electrical conductivity of at least about 10^{-6} S/cm.

10. The method of claim 9 wherein the membrane is photoelectric.

11. The method of claim 10 wherein the membrane produces current of at least about nanoamps/cm^2.

12. The method of claim 10 wherein a photo-reactive compound is also added to the polymer solution before it is spun.

13. The method of claim 12 wherein conducting nanoparticles are in the spin dope and embedded in the polymer fibers.

14. The method of claim 12 wherein a conductive polymer is in the spin dope and in the polymer fibers.

15. The method of claim 9 wherein conducting nanoparticles are in the spin dope and embedded in the polymer fibers.

16. The method of claim 9 wherein a conductive polymer is the spin dope and in the polymer fibers.